



Department of Pesticide Regulation



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Director

MEMORANDUM

Edmund G. Brown Jr.
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TO: Robert Ford, CIH
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HSM-16002

FROM: Harvard R. Fong, CIH
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(original signed by H. Fong)

DATE: June 21, 2016

SUBJECT: RECOMMENDATIONS CONCERNING SITE LOCATION AND BUILDING
OF A FUMIGATION CHAMBER IN STANISLAUS COUNTY

On June 3, 2016, Environmental Scientist Emma Wilson and I traveled to Hughson, Stanislaus County to meet with County Agricultural Commissioner (CAC) staff and facility staff at the Grower Direct nut processing facility off Service Road.

The issue under discussion was the construction of a multi-gas fumigation chamber on land east of the present processing facility structures. Figure 1 shows both the present processing facility (PF) and the proposed chamber (C) location.

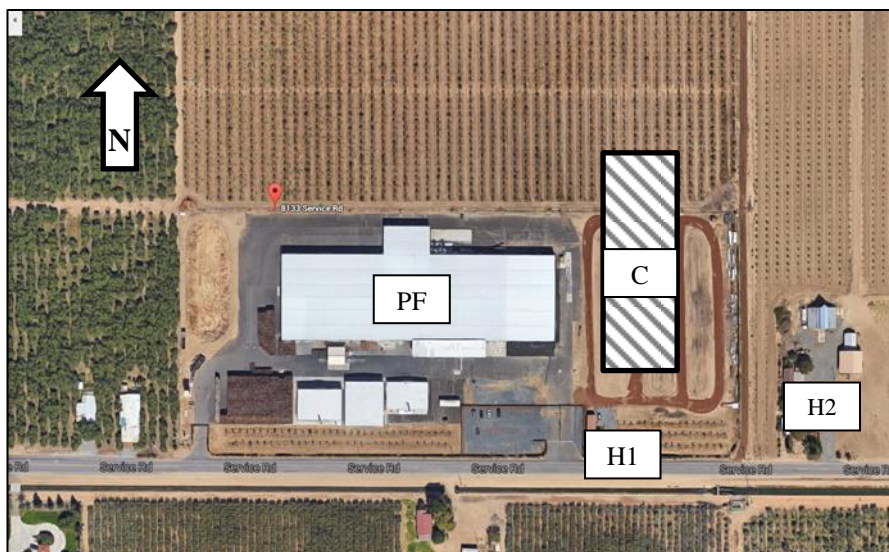


Figure 1. Proposed chamber site (C) located approximately 90 feet from the nut processing facility (PF). H1 and H2: locations of houses 100 feet and 220 feet from the proposed location, respectively.



Facility operators are proposing to construct this 1.62 million cubic foot chamber (460 ft. by 160 ft. by 22 ft.) on vacant land directly to the east of the main processing facility. The chambers would be used for both sulfuryl fluoride and phosphine fumigations. The phosphine fumigations would likely use VAPORPH3OS[®] because of the large volume to be treated. Alternatively, PRO FUME[®] would be the sulfuryl fluoride fumigant, as it is the only one registered for commodity use at this time. The chamber may have a divider wall which will reduce the required treatment volume, but will still allow full gas circulation when necessary.

A major concern for the CAC staff in developing the necessary permit conditions was the proximity of two housing complexes, identified as H1 and H2 (Figure 1). Housing complex H1 would be approximately 100 feet from the south edge of the proposed chamber while complex H2 would be approximately 220 feet from the east edge.

Both the north and south ends of the chamber would have loading dock, guillotine-style gas tight doors for access, similar to those pictured in Figure 2. The distance from the west side of the proposed chamber to the closest side of the processing facility is approximately 90 feet.



Figure 2. Chamber door similar to what would be in place for the proposed fumigation chamber.

There are two possible locations for the aeration stack. The first scenario would place it at the center of the chamber's roof, to allow either side of a divided fumigation to use the same stack. The alternate scenario could be to locate the stack in the north-east corner of the structure, to maximize the distance from both the processing facility and the housing complexes. The control room for introduction would be on the western wall, between processing and the chamber.

The Worker Health and Safety Branch, Industrial Hygiene Services has the following recommendations concerning worker protection and control of non-occupational exposure of persons in the areas of H1 and H2:

1. A dedicated monitoring system should be designed into the construction of this chamber/storage facility to monitor the residual off-gassing of treated commodity after label-required aeration has been completed. Such a system would not necessarily be used to monitor the actual fumigation and aeration, but would instead be designed to maintain surveillance of off-gassing levels to ensure that workers entering the structure are not exposed to unacceptable residual gas concentrations.
2. If a dedicated system is not feasible, then a portable monitor must be used to test chamber atmosphere each time a worker enters the chamber post-aeration for at least 30 days. If three reentries are made, separated by 24 hours, with no detectable fumigant (equipment capable of minimum detectable levels [MDL] for phosphine at 0.3 ppm and/or sulfuryl fluoride at 1 ppm), monitoring may cease until the next fumigation.
3. A ten foot occupational buffer zone should be established around the perimeter of the structure. This can be identified by painted lines, painted areas, bollards, warning tape stretched from stanchions or other such marking system. Only fumigation handler access to this area should be permitted during fumigation and the first hour of aeration.
4. During the first fumigation of the new chamber, close monitoring of the building envelope during the active fumigation phase should be performed by the fumigator or other handler staff, with special attention paid to the access doors and any aeration supply-air opening (see Figure 3 for the type of supply-air control hatch to be used for the chamber). Any detected leaks should be addressed before the next fumigation.
5. After the initial building envelope tightness testing and confirmation, retesting should be done on an annual basis or any time the structure experiences damage (i.e. forklift strikes wall).



Figure 3. Fumigation chamber air supply valves.

6. Height and location of the aeration stack and the establishment of environmental/non-occupational buffer zones should be discussed with the Environmental Monitoring Branch of DPR and their recommendation followed for every fumigation/aeration.
7. Detectors at fence-line of the housing complexes closest to the chamber should be deployed for detection of fumigation containment failure. Any detection above MDLs should trigger an evacuation response (as to be outlined in the Fumigation Management Plan) for the residents of the housing complex.

The facility manager had also mentioned that there is a possibility that the chamber site may be situated in the orchard directly north of the processing facility. If this becomes the case, Recommendation 7 no longer applies concerning fence-line monitoring, though procedures for the evacuation of the housing complex residents, in case of a catastrophic failure of a fumigant supply cylinder, should still be addressed.

The chamber should be constructed using recognized procedures and materials that are capable of holding the fumigant gas within the building envelope and are durable and chemical resistant for the uses envisioned (especially gaskets and seals).

Note that dates on photos do not correspond to actual date of image capture.

cc: Kelle Schroeder, Deputy Agricultural Commissioner, Stanislaus County
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